

09/406,368

99RE067

AMENDMENT TO THE CLAIMSIn the Claims:

Please amend the claims as follows:

Claims 1-7 (cancelled).

8. (Currently amended) A multiple axis vibration detection system, comprising:

- a light source [~~for directing~~] that directs a beam of light;
- a light receiving system [~~for receiving~~] that receives at least a portion of the beam of light;
- a first light modulating system [~~for modulating~~] that modulates the light beam received by the light receiving system so as to correspond with vibration of ~~(the)~~ a machine;
- a second light modulating system [~~for modulating~~] that modulates the light beam received by the light receiving system so as to correspond with vibration of the machine, the second light modulating system being in series to the first light modulating system; and
- a processing system [~~operatively coupled to the light receiving system, the processing system processing the~~] that analyzes data received from the light receiving system to [~~facilitate determining~~] determine vibration of the machine in a plurality of axes.

9. (Currently amended) The system of claim 8, at least one of the first light modulating system and the second light modulating system [~~including~~] include an obstruction modulator [~~adapted to obstruct~~] that obstructs the beam of light so that ~~[the at least]~~ only a portion of the beam of light is received by the light receiving system.

10. (Currently amended) The system of claim 9, the obstruction modulator [~~obstructing~~] obstructs the light beam when the machine is vibrating.

09/406,368

99RE067

11. (Currently amended) The system of claim 9, the obstruction modulator obstructs [obstructing] the light beam when the machine is not vibrating.

Claim 12-17 (previously withdrawn).

18. (Cancelled)

Claims 19, 20 (previously withdrawn).

Claims 21-32 (cancelled).

33. (New) A system that determines a vibration state for a machine, comprising:
a light receiver that receives light from a source;
an obscuring body that based on a particular vibration state of a machine obscures a portion of light transmitted from the source to the light receiver, and
a processor that analyzes an amount of light received by the light receiver to determine the particular vibration state.

34. (New) The system of claim 33, the amount of light received by the light receiver increases with increased vibration state of the machine.

35. (New) The system of claim 33, the amount of light received by the light receiver decreases with increased vibration state of the machine.

36. (New) The system of claim 33, the obscuring body is a light modulating system.

37. (New) The system of claim 36, the light modulating system includes a housing with a first opening that receives a light beam, a second opening that allows

09/406,368

99RE067

passage of a light beam to the light receiver as a function of a vibration state of the machine.

38. (New) The system of claim 36, the light modulating system is attached to the machine.

39. (New) The system of claim 38, the light modulating system further comprises an annular structure.

40. (New) The system of claim 39, the annular structure permits light to pass in one direction.

41. (New) The system of claim 33, the processor determines a vibration state of the machine based upon an area illuminated on a surface of the light receiver.

42. (New) A system that senses a vibration level for a machine, comprising a light receiving arrangement that receives light from a source; an obscuring body that obscures a light directed upon the light receiving arrangement to cast a shadow fringe thereupon at a particular vibration level of a machine, the remaining light illuminates part or all of the light receiving arrangement as a function of the particular vibration level, and a processor that analyzes the remaining light to determine the particular vibration level of the machine.

43. (New) The system of claim 42, further comprising a reflector that reflects the remaining light on to the light receiving arrangement.

44. (New) The system of claim 42, the processor analyzes an area of the light receiving arrangement that is illuminated via the remaining light to determine the particular vibration level of the machine.

09/406,368

99RE067

45. (New) The system of claim 42, the processor analyzes a non-illuminated area of the light receiving arrangement to determine the particular vibration level of the machine.

46. (New) The system of claim 42 the obscuring body is a light modulator.

47. (New) The system of claim 46 the light modulator is connected to the machine.

48. (New) The system of claim 42 the shadow fringe turns to a complete shadow when the machine reaches a specific vibration level.

49. (New) A method of sensing a vibration state for a machine comprising:
illuminating a light receiving system via a light source;
obfuscating a light directed to the light receiving system to cast a shadow fringe thereupon as a function of the vibration state of a machine; and
analyzing amount of light reaching the light receiving system to determine the vibration state of the machine.

50. (New) The method of claim 49 further comprising modulating the light.

51. (New) A system for sensing a vibration of a machine, comprising:
means for receiving a light transmitted from a light source;
means for obscuring a portion of the light directed to the light receiving means such that a remaining light illuminates part or all of the light receiving means as a function of a vibration of a machine, and
means for analyzing amount of light received by the light receiving means to determine the particular vibration of the machine.